Allocating Settlement Authority under a Contingent-Fee Arrangement

Albert Choi

ABSTRACT
A contingent-fee contract improves a plaintiff’s bargaining position against a defendant by providing an incentive to the plaintiff’s lawyer. Setting the lawyer’s share of judgment high will induce more effort from the lawyer, while keeping the lawyer’s settlement share low will reduce the legal fees and the lawyer’s rent. When the plaintiff negotiates against a tough-bargaining defendant, however, legal fee saving accrues mostly to the defendant through a lower settlement offer. To maximize her return from settlement, the plaintiff would want to delegate control to the lawyer and guarantee him a large rent. She would want to delegate especially when the lawyer is more expensive and the size of the claim is small, as in individual tort cases.

1. INTRODUCTION

One of the most widespread negative perceptions about the lawyers who represent individual plaintiffs is that they unjustly enrich themselves at the expense of their hapless clients.1 While large institutional defendants closely monitor the outside lawyers’ activities and become actively involved in legal decision making through their in-house counsels, indi-

ALBERT CHOI is at the Department of Economics, University of Virginia. I am grateful to Ian Ayres, Howard Chang, Stephen Choi, Ken Elzinga, Maxim Engers, Bob Gibbons, Bengt Holmstrom, Alvin Klevorick, Sendhil Mullainathan, A. Mitch Polinsky, Jennifer Reinganum, Susan Rose-Ackerman, Alan Schwartz, Alan Sykes, Eric Talley, and two anonymous referees for many helpful comments and suggestions. I am also grateful for summer research support from the John M. Olin Center for Law, Economics, and Public Policy at Yale Law School.


© 2003 by The University of Chicago. All rights reserved. 0047-2530/2003/3202-0008$01.50
Individual plaintiffs have no choice but to rely on their lawyers' "recommendations" and to pay the legal fees their lawyers request. Especially when the attention is on contingent-fee cases, the evils are supposedly amplified. Critics offer many real-world examples of contingent-fee lawyers earning so much from doing so little, while their clients walk away from the system poorly compensated and, in many cases, feeling bitter.

The well-voiced criticisms notwithstanding, the fact that so many individual plaintiffs remains putatively "captured" by their lawyers remains a puzzling issue. Why do they not spend more time and energy to become better informed about their predicaments? Why not try to control their lawyers by demanding more detailed explanations of fees and strategies? Even if information acquisition to exercise effective control is costly, why not try to better align their lawyers' interests through contracts? In fact, contingent-fee contracts are supposed to control the lawyer's undereffort and overbilling problems. It seems quite surprising that, in reality, they are viewed as a paramount example of attorney's self-serving and greed.

As an attempt to solve these puzzles, this paper addresses the issues of attorney control and compensation under contingent-fee contracts. Broadly, the paper examines the bargaining problem between a plaintiff and a defendant and asks how the plaintiff can enhance her bargaining power by contracting with a third party, her lawyer. More specifically, the paper analyzes whether it is always in the plaintiff's interest to take the helm of the litigation and minimize the legal fees, that is, eliminate the lawyer's rent. An interesting result is that leaving the lawyer in charge


4. On the basis of a survey, Kritzer (1998, pp. 60–67) finds that a majority of individual clients do not even discuss allocation of responsibility and leave their lawyers in charge of almost every major decision.

5. Kritzer (1990, pp. 88, 116) reports a strong positive relationship between stake and hours worked. Reducing the undereffort problem is not the only rationale in favor of contingent fees. The most frequently proffered justification is access to the legal system for the financially constrained. See generally Brickman (1989).

6. See Green (1991) for a theoretical analysis of third-party contracts. Other papers
have examined the attorney-client problem from the lawyer's expertise or information asymmetry perspective. See, for example, Dana and Spier (1993); Watts (1994); and Hay (1995, 1996). This paper shows that even when the plaintiff has perfect information about the case, she would still have an incentive to delegate the decision making authority to her lawyer and leave the lawyer a large rent.
of the litigation and guaranteeing him a large amount of rent can actually increase the plaintiff’s return from settlement.

We assume that the plaintiff and the lawyer are in a principal-agent relationship and that the amount of effort the lawyer puts into the case is not observable to the plaintiff. When the lawyer has no stake in the client’s claim, therefore, he will have little incentive to exert costly effort. For instance, if compensation is based on the reported number of hours worked, he will engage in cost padding; similarly, if a fixed fee is used, the lawyer will exert no effort and always claim the fee after the case is resolved.\(^7\) So, instead of paying by the hour or promising a fixed fee, the plaintiff can alleviate the moral-hazard problem by assigning a share of the claim to the lawyer through a contingent-fee contract.

In addition to partially solving the undereffort problem, the contingent-fee contract also has implications for the settlement process. When the lawyer is expected to put more effort into the case, the defendant’s expected loss from trial becomes larger, inducing him to make a higher settlement offer than before. If the plaintiff selectively reduces the lawyer’s share of settlement, she can further increase her settlement return. By promising the lawyer a high fraction of judgment, she keeps her agent’s interests aligned and extracts a high settlement offer, and by reducing the lawyer’s settlement share, she grabs a bigger portion of it.\(^8\)

But how much should the plaintiff reduce the lawyer’s settlement share? Should she always eliminate the lawyer’s rent? The answer depends on whether the plaintiff delegates the authority to the lawyer or negotiates the settlement terms herself. If she remains in charge, although she can minimize her legal bills, such fee saving weakens her bargaining position against the defendant. Because reduction of the lawyer’s settle-

\(^7\) Lerman (1990, 1998) enumerates numerous tactics used by law firms to overcharge their clients when compensation is based on the hours worked. Budiansky, Gest, and Fischer (1995, p. 55) also report that more than 60 percent of lawyers have personal knowledge of bill padding.

\(^8\) Although this assumption seems restrictive, when the plaintiff cannot observe some aspects of the lawyer’s effort, a contingent-fee scheme is useful in providing incentive, and the main conclusions of the paper will remain unchanged. Further, while the plaintiff could combine a fixed settlement fee with a contingent share for judgment, we show that she always does better by using two-tier contingent fees. See note 18.

\(^9\) According to Nathan Crystal (2000, p. 224), “[C]ommon contingent fee in a personal injury action is 25 percent if the matter is settled before trial, 33 percent if the matter is settled after a jury is selected, and 50 percent if the matter is concluded after appeal.” See also Brickman (1996, p. 287), who notes that a contingent fee of 33 percent if a case settles without a suit, 40 percent if a suit is filed, and 50 percent if a case goes to trial is “standard.”
ment share increases her return dollar for dollar, even if the settlement offer decreases by a little, she would still be willing to accept the offer. Especially if the defendant is a strong bargainer, most of her fee saving can accrue to the defendant through a lower settlement offer, leaving her only marginally better off from settlement than proceeding to trial.

When she leaves the lawyer in charge,\textsuperscript{10} on the other hand, reducing the lawyer’s settlement share strengthens their bargaining position vis-à-vis the defendant. The settlement amount now depends on the lawyer’s reservation value, and when the plaintiff reduces his settlement share, the offer needs to be larger to make him accept the offer, since he is getting a small fraction of settlement while his expected return from trial is unchanged. At optimum, the lawyer can extract the highest possible offer from the defendant, and the plaintiff takes maximal advantage of the settlement opportunity. At the same time, the lawyer also walks away with a sizable rent, since his settlement return is higher than his expected return from trial, which is already bigger than his outside option.

This paper is organized as follows. In the next section, I provide a simple numerical example to demonstrate the main ideas of the paper without delving much into technical analysis. In Section 3, I lay out the basics of the model, especially the plaintiff’s problem of maximizing her return subject to various incentive constraints. In Section 4, I analyze the benchmark single-contingent-fee case to highlight the inherent conflicts of interest problem in settlement and to show why delegation is never useful in a single-fee setting. Then, in Section 5, I show how the plaintiff can strictly improve her return using a two-tier contingent fee and, more important, why delegating and leaving a (potentially) large surplus to her lawyer can be beneficial. Section 6 concludes with some thoughts for future research.

2. AN ILLUSTRATIVE EXAMPLE

Suppose a plaintiff retains a lawyer, with a secure outside option of $100 ($\bar{U}$), to litigate against a single defendant. The expected size of the judg-

\textsuperscript{10} The lawyer is authorized by the plaintiff not only to negotiate but also to enter into a legally binding settlement agreement with the defendant. According to the Restatement (Third) of the Law Governing Lawyers (1988, sec. 33.1), so long as such decision is revocable, the client can “validly authorize to the lawyer” the decision “whether and on what terms to settle a [civil] claim.” The problem can arise if the delegation is not express or implied. See also Restatement (Second) of Agency (1958, sec. 1). For a recent examination of whether the lawyer can settle claims based on apparent authority, see Parness and Bartlett (1999).
Table 1. Relevant Parameters

<table>
<thead>
<tr>
<th>α (%)</th>
<th>( P )</th>
<th>PW ($)</th>
<th>( \phi ) ($)</th>
<th>( \alpha PW - \phi ) ($)</th>
<th>( (1 - \alpha)PW ) ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>.5</td>
<td>500</td>
<td>50</td>
<td>100</td>
<td>350</td>
</tr>
<tr>
<td>40</td>
<td>.7</td>
<td>700</td>
<td>100</td>
<td>180</td>
<td>420</td>
</tr>
<tr>
<td>50</td>
<td>.8</td>
<td>800</td>
<td>150</td>
<td>250</td>
<td>400</td>
</tr>
</tbody>
</table>

When there is no opportunity to settle the case, the best the plaintiff can do is to set \( \alpha \) equal to 40 percent and receive an expected return of $420 from trial. Even if they can settle the case, when a single contingent fee is used, the plaintiff cannot do better than in the case with no settlement opportunity. To see this, suppose the plaintiff negotiates the settlement terms herself.\(^1\) If we let \( S \) be the settlement amount, for the defendant to agree to pay \( S \) instead of proceeding to trial, \( S \) must satisfy \( S \leq PW \). Similarly, the plaintiff expects to receive \( (1 - \alpha)PW \) from trial, so we need \( (1 - \alpha)S \geq (1 - \alpha)PW \), or \( S \geq PW \). The only feasible settlement amount, therefore, is \( PW \), and the plaintiff receives \( (1 - \alpha)PW \), which is equal to her expected return from trial. Again, the plaintiff maximizes her return by setting \( \alpha \) equal to 40 percent and receiving $420 from settlement. The lawyer, on the other hand, receives $280 (\( = (.4)(\$700) \)) from settlement, $180 more than his outside option of $100.

Suppose the plaintiff wishes to recapture some of the rent accruing

---

\(^1\) In the next section, we will show that in the case of a single contingent fee, delegation of settlement authority makes the plaintiff strictly worse off.
to the lawyer by selectively reducing the lawyer’s settlement share ($\beta$). When she negotiates directly with the defendant, for her to agree to settle we now need $(1 - \beta)S \geq (1 - \alpha)PW$, or $S \geq [(1 - \alpha)/(1 - \beta)]PW$. On the defendant’s side, as before, we need $S \leq PW$. Contrary to the previous case, when the plaintiff reduces the lawyer’s settlement share ($\alpha > \beta$), she has created some surplus $[(1 - \alpha)/(1 - \beta)]PW < PW$ to be bargained over between her and the defendant. However, if the defendant is a much tougher bargainer, most of that surplus will accrue to the defendant through a lower settlement offer. They will settle at $S = [(1 - \alpha)/(1 - \beta)]PW$, leaving the plaintiff only $(1 - \alpha)PW$ in settlement and no better off than in the case without the chance to settle. To see this, suppose $\alpha$ equals 40 percent and $\beta$ equals 20 percent. Then, the defendant pays $525 (= .6(800))$ in settlement, of which the plaintiff and the lawyer get $420 (= .8(525))$ and $105 (= .2(525))$, respectively. Although the lawyer’s rent has now shrunk by $175$ (from $180$ to $5$), it accrues entirely to the defendant, since he now pays only $525$ instead of $700$.

Can the plaintiff somehow increase her settlement return against a tough defendant without having to face a lower settlement offer? Suppose she lets the lawyer negotiate with the defendant and make de facto settlement decisions. When the lawyer acts in her self-interest, to induce him to settle we need $\beta S \geq \alpha PW - \phi$ or $S \geq (\alpha PW - \phi) / \beta$. Similarly, to induce the defendant to settle, we need $S \leq PW$. Suppose the plaintiff sets $\alpha$ equal to 50 percent and $\beta$ equal to 33 percent. Then, given the lawyer’s expected trial return of $250 (= .5(800) - 150)$, the lawyer will demand at least $758 (= (\alpha PW - \phi) / \beta = 250/33)$, and when the defendant has all the bargaining power, they will settle at $758$. The difference from the last case, however, is that the plaintiff now receives $508 (= .67(758))$ from settlement while the lawyer nets $250 (= .33(758))$. Although the lawyer still receives $150 more than his outside option, the plaintiff also improves her own return from $420 to $508. On the defendant’s side, not only is his expected trial loss bigger ($800 from $700$), but he gains little from

12. The plaintiff could combine a contingent fee for judgment with a fixed fee for settlement, but she cannot do better than when there is no chance to settle. Suppose she sets $F$ as a fixed settlement fee. When she retains the authority, we need $S - F \geq (1 - \alpha)PW$, so her net return is still equal to the expected return from trial. When she delegates, we need $F \geq \alpha PW - \phi$. The defendant will not offer more than $F$, and the plaintiff receives nothing from settlement. Therefore, the plaintiff should retain the authority, and she does no better than when there is no chance to settle.
settling the case (surplus of $42). The two examples are illustrated in Table 2.

On its face, the second case seems to be a model example of an abusive practice of contingent fees. Not only is the lawyer making de facto settlement decisions, but he is also getting much bigger shares of both the judgment and settlement awards. Indeed, the lawyer gets two-and-a-half times his regular fees. Despite the apparent symptoms of serious agency problems, as the example demonstrates, leaving control to the lawyer and paying him more can actually increase the plaintiff’s return from litigation. This is because when the plaintiff takes charge, even though she can minimize the lawyer’s rent, the tough-bargaining defendant mostly benefits through a lower settlement offer. When she relinquishes control to her lawyer and pays him more, she can increase both the settlement offer and her settlement return while simultaneously reducing the defendant’s rent.

This result stems from the effect of changing the lawyer’s settlement share on the plaintiff-lawyer pair’s reservation value. When the plaintiff negotiates the settlement, because a decrease in legal fees translates into cost saving for the plaintiff dollar-for-dollar, even if the settlement offer becomes a little lower, she would still be willing to accept the offer. Reduction in the lawyer’s settlement share lowers the plaintiff’s reservation value and, hence, her bargaining position. When she leaves the lawyer in charge, however, the opposite happens. When the lawyer receives a smaller fraction of settlement, to induce him to settle the offer needs to be larger. By reducing the lawyer’s settlement share, therefore, the plaintiff increases the reservation value of the lawyer and elicits a higher offer from the defendant. Although delegation “guarantees” a big compensation to the lawyer, the plaintiff is also better off from a larger settlement.
3. THE MODEL

A plaintiff and her lawyer are engaged in a litigation against a single defendant. There are three periods, $t \in \{0, 1, 2\}$, where the first period ($t = 1$) presents a settlement opportunity and the trial occurs in the second period ($t = 2$), conditional on there being no settlement in the first period. The size of the judgment award from trial, if the plaintiff wins, is $W$, while the probability of winning is $p(e)$, where $e$ denotes the amount of plaintiff’s lawyer’s unobservable effort at trial. We assume that while effort is costly ($\phi(e) > 0$, where $\phi'(e) > 0$ and $\phi''(e) \geq 0$), more effort increases the plaintiff’s probability of winning at trial ($p'(e) > 0$ and $p''(e) < 0$).

At $t = 0$, the plaintiff sets the contingent-fee shares $(\alpha, \beta)$, where $\alpha$ and $\beta$ denote the fractions of judgment and settlement promised to the lawyer, respectively. The plaintiff also decides whether to retain the settlement authority or delegate the authority to the lawyer, that is, whether she will actively participate in the settlement or leave the lawyer in charge. We assume that $W, p(\cdot), \phi(\cdot), (\alpha, \beta)$, and who has the authority to settle are known to everyone, so the only unobservable variable to both the plaintiff and the defendant is the amount of effort (and its cost) of the lawyer. At $t = 2$, the lawyer will selfishly choose the amount of effort ($e$) to maximize his own return $(\alpha p(e)W - \phi(e))$, and this defines

13. So the lawyer is essential to the plaintiff’s case and there is no agency problem on the defendant’s side. While the second assumption is unrealistic, it enables us to concentrate on the plaintiff’s issue better, so even if we incorporate the defendant’s agency problem, not much would be lost in analyzing the plaintiff’s contract. For examples of defendants’ conflicts-of-interest problems, see, for example, Meurer (1992); Sykes (1994). See also the discussion in the conclusion section.

14. The term $W$ denotes the expected return from trial conditional on winning: $W = E(w | \text{plaintiff wins})$, where $w$ represents the realized verdict.

15. Setting $\alpha$ or $\beta$ above 50 percent is most likely not allowed in the common law, but for modeling purposes we discard this restriction. See, for example, Gruskay v. Sijmenskas (107 Conn. 380, 140 A. 724 [1928]); In re Disbarment of Ostensoe (196 Minn. 102, 264 N.W. 569 [1936]). But see Sayble v. Feinman (76 Cal. App. 3d 509, 142 Cal. Rptr. 895 [1978]). Furthermore, some states, such as Florida and New Jersey, have adopted statutory caps on contingent fees for certain types of cases. See Florida Bar Regulations (2000, R. 4-1.5(f)(4)(B)(a-d)); N.J. Court Rules (1999, 1969 R. 1:21-7(c)). All results can be easily reinterpreted with the fee caps.

16. Bruce Hay (1997) is first to systematically analyze the two-tier contingent-fee problem. On the other hand, while he does examine the issue of “control,” he does not consider the issue of lawyer’s rent. Considering the lawyer’s rent enables us to analyze the trade-off between the lawyer’s and the defendant’s rents and to analyze how the control issue is sensitive to the size of the claim or the lawyer’s outside option.
the amount of effort in terms of lawyer's judgment share, \( e(\alpha) \), such that \( e'(\alpha) > 0 \). For notational convenience, we will write \( p \) and \( \phi \) instead of \( p(e(\alpha)) \) and \( \phi(e(\alpha)) \).

At \( t = 1 \), they engage in settlement negotiations. For convenience, we assume that the negotiations do not require any effort from either party\(^{17}\) and that they play a Nash bargaining game.\(^{18}\) The defendant's expected loss from trial is \( \rho W \), and this is the maximum the defendant would be willing to pay to settle the case (his reservation settlement offer, \( R_d \)). On the plaintiff's side, the reservation settlement offer depends on who has the authority to settle the case. If we let \( S \) be the settlement amount, if the plaintiff negotiates herself, she would be willing to settle only if \( (1 - \beta)S \geq (1 - \alpha)pW \), so her reservation settlement offer is \( [(1 - \alpha)pW]/(1 - \beta) \equiv R_p \). On the other hand, if she delegates the authority, the lawyer will settle only if \( \beta S \geq \alpha pW - \phi \), yielding \( (\alpha pW - \phi)/\beta \equiv R_\lambda \). So the contingent-fee contract affects not only the expected outcome of the trial but also the propensity to settle the case.

Finally, we assume that the defendant's relative bargaining powers against the plaintiff and the lawyer can be represented by \( \gamma \) and \( \delta \), respectively, where both are strictly between zero and one. When the plaintiff negotiates, the settlement amount \( S_p \) is equal to \( \gamma R_p + (1 - \gamma)R_d \), where \( \gamma \) close to zero implies the defendant's strong bargaining position against the plaintiff. Similarly, if the lawyer negotiates, \( S_\lambda = \delta R_\lambda + (1 - \delta)R_d \). Given no information asymmetry between the litigants, they will always settle in this model, as long as their settlement returns are better than their expected returns from trial. Since proceeding to trial imposes a deadweight loss (of the lawyer's effort), the plaintiff's objective is to maximize her settlement outcome without having to proceed to trial.

---

17. This is for the sake of simplicity. If the settlement did require some effort, the plaintiff can take the cost into account in setting the settlement share \( \beta \). Regardless, the model is quite relevant to cases that settle early. Brickman, Horowitz, and O'Connell (1994) propose that for the cases that settle early, the contingent fee on settlement amount should be capped at or below 10 percent to eliminate the lawyer's rent. This paper indirectly argues that if we were to cap settlement-fee percentage, we must concurrently think about the judgment-fee percentage, since otherwise we may be making plaintiffs worse off than before.

18. I have in mind a situation where both parties alternate in making offers, with neither party having the power to make the last offer. In the simplest setting, when the plaintiff retains the authority, if the "nature" chooses the defendant to make a take-it-or-leave-it offer with probability \( \gamma \) (plaintiff with probability \( 1 - \gamma \)), the expected settlement amount will be \( \gamma R_p + (1 - \gamma)R_d \).
At $t = 0$, the plaintiff is to choose $\{\alpha, \beta\}$ with the appropriate allocation of settlement authority to maximize her settlement payoff. When she retains the authority, she wants to maximize $(1 - \beta)S_p$ while making sure that neither she nor the defendant would want to proceed to trial,

$$(1 - \beta)S_p \geq (1 - \alpha)pW, \quad \text{(P1)}$$

and that her lawyer will not quit in either the settlement or trial stage,

$$\beta S_p \geq U \quad \text{(P2)}$$

and

$$\alpha pW - \phi \geq U. \quad \text{(P3)}$$

While (P1) states only that settling the case must be in the plaintiff’s interest, after simplification it becomes $S_p \leq pW$: it also ensures that the defendant is better off from settling than proceeding to trial.\(^19\)

Similarly, if the plaintiff chooses to delegate the authority to the lawyer, she wants to maximize $(1 - \beta)S_\lambda$ subject to the constraints that it is in both the lawyer’s and the defendant’s interests to settle, $\beta S_\lambda \geq \alpha pW - \phi$ (A1), and that the lawyer will not quit at any stage of the litigation, $\alpha pW - \phi \geq U$ (A2). Similar to (P1), the first constraint (A1) also satisfies the defendant’s incentive to settle; that is, $S_\lambda \leq pW$. Also, the combination of (A1) and (A2) ensures that the lawyer’s settlement return is higher than his outside option, so that he will not quit at the settlement stage.\(^20\)

4. THE SINGLE-FEE BENCHMARK

Suppose the plaintiff is constrained to use a single contingent fee ($\alpha = \beta$). When the plaintiff retains the authority, her reservation settlement offer is $R_p = pW$. Since this is equal to the maximum the defendant is willing to pay to settle, they will settle at $S_p = pW$. Hence, the plaintiff

\(^{19}\) With $S_p = \gamma R_p + (1 - \gamma)R_p$, $(1 - \beta)S_p \geq (1 - \alpha)pW$ becomes $\gamma(1 - \alpha)pW + (1 - \beta)(1 - \gamma)pW \geq (1 - \alpha)pW$, which simplifies to $[(1 - \alpha)/(1 - \beta)]pW \leq pW$. Since $\gamma$ is in $(0, 1)$, $[(1 - \alpha)/(1 - \beta)]pW \leq pW$ if and only if $[\gamma(1 - \alpha)/(1 - \beta)] + (1 - \gamma)pW \leq pW$, which is, by definition, $S_p \leq pW$.

\(^{20}\) With $S_\lambda = \delta R_\lambda + (1 - \delta)R_\lambda$, $\beta S_\lambda \geq \alpha pW - \phi$ becomes $pW \geq (\alpha pW - \phi)/\beta$. If we multiply both sides of the inequality with $\delta$ and add $(1 - \delta)pW$, we get $pW \geq \delta(\alpha pW - \phi)/\beta + (1 - \delta)pW$, or $pW \geq S_\lambda$. 
receives \((1 - \alpha)pW\), and the lawyer receives \(\alpha pW\). On the other hand, if the plaintiff delegates the authority, the minimum settlement offer the lawyer is willing to accept is \(R_\alpha = pW - \phi/\alpha\), so the lawyer and the defendant will settle at \(S_\alpha = pW - (\delta/\alpha)\phi\). This leaves the plaintiff \((1 - \alpha)pW - [(1 - \alpha)\phi]/\alpha\) and the lawyer \(\alpha pW - \delta \phi\).

When the plaintiff negotiates with the defendant, her settlement return \((pW)\) is identical to her expected return from trial \((pW)\). With the contingent-fee structure, the plaintiff does not directly bear any litigation cost when the case proceeds to trial, and therefore she is indifferent between settling and going to trial.\(^{21}\) Second, regardless of who negotiates with the defendant, the lawyer always prefers to settle. This is because the lawyer has to bear the cost of effort at trial. Since he can eliminate this cost (at least partially) by settling, settling is advantageous even if it makes the plaintiff worse off. As well known in the literature, using a single contingent fee not only provides too much incentive for the lawyer to settle but also leaves the lawyer a (potentially large) rent.\(^{22}\)

Third, the settlement amount under the lawyer’s authority is always lower than that under the plaintiff’s authority \((S_\alpha < S_p)\). This is because the lawyer is weakened by the prospect that he will have to incur the effort cost if the case proceeds to trial while the plaintiff does not face this problem. The size of the pie is bigger when the plaintiff retains the authority and, therefore, it is easy to conjecture that when a single fee is used, it is in both the plaintiff’s and the lawyer’s interests for the plaintiff to personally negotiate with the defendant.

For technical convenience, we assume that \(W\) is large enough that if \(\alpha^*\) is the optimal single contingent fee, the lawyer’s expected return from trial is at least as large as his outside option: \(\alpha^*p^*W - \phi^* \geq U\). The assumption allows us focus on the “interior” solutions; that is, \(\alpha^*\) is not dictated solely by \(U\), so we can better conduct comparative statics, such as how the optimal shares (\(\alpha\) and \(\beta\)) and the client’s and lawyer’s returns change with respect to the size of the claim and the relative bargaining powers. Dropping the assumption will not change the results of the paper but will make the analysis much more cumbersome.

**Proposition 1.** When a single rate is used, both the plaintiff and

---

\(^{21}\) This point is noted by Bebchuk and Guzman (1996), who argue that the client’s bargaining power in settlement is higher when she uses contingency fee than hourly fee.

\(^{22}\) This was first noted by Miller (1987), who also concludes that the optimal arrangement is to use a (unitary) contingent fee and leave the settlement authority to the client.
the lawyer are better off when the plaintiff negotiates the settlement, unless the lawyer has the maximum bargaining power ($\delta \to 0$). The plaintiff is indifferent to having a settlement opportunity, while the lawyer strictly prefers to settle.

**Proof.** See the Appendix.

It is important to note that many aspects of the litigation—such as the size of the settlement and the amounts of rent captured by the plaintiff, the lawyer, and the defendant—are quite sensitive to whether the plaintiff delegates the settlement authority to the lawyer or not. For instance, when the plaintiff retains the authority, the lawyer receives a "windfall" from settling ($\alpha pW$ instead of $\alpha pW - \phi$), whereas the defendant is no better off from settlement than from proceeding to trial ($pW$ versus $pW$). On the other hand, if the plaintiff delegates the authority, while the lawyer's rent is reduced ($\alpha pW - \delta \phi$ versus $\alpha pW - \phi$), the defendant receives some settlement rent (he pays $pW - (\delta/\alpha)\phi$ instead of $pW$). From the plaintiff's perspective, therefore, there is a trade-off between reducing the lawyer's rent and reducing the defendant's rent, and eliminating one may entail enlarging the other.

5. **Optimal Two-Tier Contingent Fees**

When the plaintiff can adjust the lawyer's settlement share, she would generally be better off. In the single-contingent-fee case, the reason she was getting no additional benefit from settling the case was that the settlement fee for the lawyer was too high. The lawyer walked away with a high surplus even though he played no direct role in settlement. If she can reduce his settlement fee, she can strictly increase her settlement return without destroying the incentive provided to the lawyer. Not surprisingly, this is independent of who is in control of settlement negotiations.

5.1. **When the Plaintiff Retains the Settlement Authority**

The gist of the plaintiff's contracting problem lies in making a trade-off between extracting the defendant's surplus and reducing the lawyer's fees. The trade-off notwithstanding, when the plaintiff negotiates the settlement terms herself, she will always minimize the lawyer's fees first. When she pays the lawyer less in settlement, her return increases exactly as much as the amount of fee reduction. On the other hand, extracting more surplus from the defendant can be done only through raising the
minimum settlement offer she would be willing to accept. Since she receives only a fraction of the total surplus from settlement, even when she raises her reservation settlement offer by one, the settlement amount will rise by less than one. Reducing the lawyer’s surplus is cheaper and more efficient for the plaintiff. At optimum, therefore, the plaintiff will pay the lawyer no more than his outside option, but the defendant will walk away with rent from settlement.

**Proposition 2.** When the plaintiff retains the settlement authority and uses two-tier contingent fees, the lawyer receives no more than his outside option through settlement ((P2) binds), but the defendant pays less than what he expects to lose from trial ((P1) does not bind). The lawyer receives no rent from settlement, but the defendant is better off through settlement than proceeding to trial.

**Proof.** See the Appendix.

With the lawyer’s settlement compensation reduced down to his outside option, the plaintiff’s return can be stated as \((1 - \beta)S_p = S_p - \bar{U}\). Now the plaintiff turns her eyes to minimizing the defendant’s surplus. The amount of rent the defendant gets depends, foremost, on her bargaining power. There are two channels of influence. The first is by slicing different shares of the surplus \((\gamma)\), and the second is by affecting the total return \((S_p)\) through changing her reservation settlement offer \((R_p)\).

If she is a strong bargainer \((\gamma \approx 0)\), she will captures most of the surplus of settlement, \(S_p \approx PW\). She also does not need to worry about decreasing her reservation settlement offer by committing a higher fraction of trial return to the lawyer. By increasing \(\alpha\), she minimizes the lawyer’s under-effort problem and increases the size of her trial return. Thus, not only does the defendant gets almost no rent, he faces a worse trial prospect.

If the plaintiff is a weak bargainer \((\gamma \approx 1)\), on the other hand, she cannot expect to recover more than what her reservation settlement offer dictates, \(S_p \approx R_p\), so the bulk of the settlement surplus goes to the defendant. Worse still, she needs to be much more concerned about decreasing her reservation settlement offer, since it directly affects her return from settlement. She will be quite hesitant to increase \(\alpha\) so high. Hence, not only would her settlement amount approximate her expected recovery through trial, but the expected recovery would also be lower than when she is a strong bargainer.

**Corollary 1.** Compared with the single-contingent-fee case, when the plaintiff retains the authority and uses two-tier contingent fees, the plaintiff is strictly better off while the lawyer is strictly worse off. The
optimal contract \((\alpha_p, \beta_p)\) specifies a larger trial contingent fee with a lower settlement contingent fee \((\alpha_p > \beta_p)\), where the trial contingent fee is strictly higher than in the single-contingent-fee case \((\alpha^* < \alpha_p < 1)\). An increase in the plaintiff's bargaining power \((\gamma \to 0)\) increases the trial contingent fee but decreases the settlement contingent fee: \(\alpha_p\) is increasing, while \(\beta_p\) is decreasing, in \(\gamma\).

**Proof.** See the Appendix.

Let us briefly examine the case of the plaintiff with the weaker bargaining power. When \(\gamma \approx 1\), her problem seems almost identical to the case of single contingent fee. Her settlement return is “independent” of \(\beta\) since her return is equal to \((1 - \alpha)pW\). Similarity stops there, however. First, we know that the lawyer’s settlement compensation is equal to his outside option for all \(\gamma\). In the case of a single contingent fee, however, the lawyer received more than his outside option. The lawyer is strictly worse off under two-tier fees, independent of the plaintiff’s bargaining power. The defendant also pays less. This is because while the client’s return is the same, the lawyer is getting less. Even though the plaintiff’s return seems independent of \(\beta\), two-tier fees are still useful for the plaintiff because reducing the lawyer’s fee in case of settlement is more beneficial for the plaintiff than increasing the settlement offer.\(^{23}\)

The crucial parameter under the plaintiff’s authority is, thus, her bargaining power. As her bargaining power increases, she commits a higher fraction of trial return but a lower fraction of settlement return to the lawyer. The exact opposite happens as her bargaining power decreases. A plaintiff with the highest bargaining power \((\gamma \approx 0)\) will sell the entire claim to the lawyer, eliminate the undereffort problem, and take full advantage of the settlement opportunity. For a plaintiff with very little bargaining power \((\gamma \approx 1)\), the settlement opportunity provides little additional benefit, although bifurcated fees let her minimize the cost of litigation.

**5.2. When the Plaintiff Delegates the Settlement Authority**

When the plaintiff retains the settlement authority, she can pay the lawyer less in settlement than what he expects to receive from trial \((\beta S < \ldots\).

\(^{23}\) Hay (1997, p. 270) argues that the advantage of bifurcated fee is not the “greatest” when the client “controls” the litigation but has a weak bargaining power. But I show that regardless of the client's bargaining power or whether she delegates or retains the authority, a two-tier contingent fee is always useful in eliminating either the lawyer's or the defendant's rent.
\(a\omega W - \phi\). Since she decides whether or not to settle the case, as long as the lawyer's outside option is met, relative levels of compensation do not matter. When she delegates the decision authority, however, the relative levels become important. Unless the lawyer expects a higher return from settlement than from trial, he will recommend that they proceed to trial. Therefore, even though the plaintiff would like to reduce his settlement fee as much as possible, his settlement compensation needs to at least match his trial compensation \(\beta S \geq a\omega W - \phi\). The lawyer, at optimum, will receive some rent through settlement.

On the other hand, reducing the defendant’s surplus becomes much easier with delegation. The main difference lies in how the lawyer’s settlement share affects the plaintiff-lawyer pair’s reservation settlement offer. Under delegation, when the plaintiff decreases the lawyer’s share \(\beta\), the settlement offer needs to be higher to induce the lawyer to accept it. A decrease in \(\beta\) increases the reservation settlement offer under delegation. When the plaintiff retains the authority, however, a reduction in settlement fee directly translates into cost saving for the plaintiff, so the defendant can now make a lower offer to keep her as satisfied as before. A decrease in \(\beta\) decreases the reservation settlement offer under retainment. Hence, under delegation, reduction of the lawyer’s settlement share not only improves their bargaining position but also gives the plaintiff a bigger share of settlement. When she negotiates the settlement terms, the cost reduction is compromised by their reduced bargaining position.

Proposition 3. When the plaintiff delegates the settlement authority to the lawyer and uses two-tier contingent fees, the defendant pays his expected trial loss through settlement (condition \(A1\) binds), but the lawyer receives more than his outside option (condition \(A2\) does not bind): while the defendant’s rent is eliminated, the lawyer’s rent is not.

Proof. See the Appendix.

The fact that the defendant receives no rent through settlement implies that there is no room for negotiation, that is, \(R_A = R_D = \rho W\), so the lawyer's relative bargaining power is irrelevant. The plaintiff can always leverage the lawyer’s reservation settlement offer to extract all the surplus from the defendant. The plaintiff's return can be rewritten \(\rho W - (a\omega W - \phi)\). Recall that under the case of single contingent fee, the plaintiff could maximize only her trial return, so her return from settlement was \(\rho W - a\omega W\). With two-tier contingent fee and delegation, for any given trial share to the lawyer \(\alpha\), the plaintiff pays the lawyer less.
At the same time, she also increases the total size of the pie by increasing $\alpha$. In short, not only does she pays the lawyer less, she also provides more incentive for the lawyer.

Corollary 2. Compared to the case of single contingent fee, when the plaintiff delegates the authority and uses two-tier contingent fees, the plaintiff is strictly better off. The lawyer, on the other hand, may or may not be better off. The optimal contract $(\alpha_A, \beta_A)$ specifies a larger trial contingent fee with a lower settlement contingent fee $(\alpha_A > \beta_A)$, where the trial contingent fee is strictly higher than the optimal single contingent fee $(\alpha^* < \alpha_A < 1)$.

Proof. See the Appendix.

On the issue of delegation, when two-tier contingent fees are used, the lawyer would rather negotiate the settlement terms himself than leave it to the client. Recall that in the case of single contingent fee, the lawyer always preferred the client to be in charge of negotiations. The primary reason was that the lawyer always had a weaker bargaining power than the plaintiff. Although this is still nominally true under a two-tier contingent fee, the reduction of his surplus dominates the weakened bargaining position. Because, under delegation, the plaintiff can leverage the lawyer's reservation settlement offer up to the defendant's, the bargaining position weakening effect disappears. Delegation, therefore, provides downward protection to the lawyer's compensation without diluting his bargaining position.

5.3. When Should the Plaintiff Delegate?

When the plaintiff is a strong bargainer, she can elicit a high settlement offer from the defendant by negotiating the settlement terms herself. She also minimizes the lawyer's fee in settlement. Although delegation brings forth maximum extraction from the defendant, since she could do this herself, she would rather save on the lawyer's fee. The story is reversed for a plaintiff with little bargaining power. Minimizing the lawyer's fee still applies, but because she faces a relatively tough opponent, she cannot expect to recover more than what her expected trial results dictate. In such case, even if delegating the authority to the lawyer is costly, the benefit is much larger. She should treat her lawyer more generously in hopes of getting an even bigger return from settlement.

Proposition 4. The plaintiff is more likely to delegate when she has weaker bargaining power against the defendant: there exists $\gamma^* \in (0,
1) such that for all $\gamma < \gamma^*$, the plaintiff is better off negotiating the settlement terms herself, and for all $\gamma > \gamma^*$, delegation dominates.

Proof. See the Appendix.

Given that delegation is beneficial for a plaintiff with weak bargaining power, the question remains as to whether the plaintiff would ever want to revoke the authority delegated to the lawyer. This could be a potential problem if the defendant has the power to make the last settlement offer before trial. If so, the defendant can offer only $\frac{(1 - \alpha_A)(1 - \beta_A)}{p} W$ (instead of $pW$) and request the plaintiff to revoke the authority. Rather than reject the offer and proceed to trial, she will revoke the authority and settle for the net return of $\frac{(1 - \alpha_A)}{p} (\alpha_A) W$. On the other hand, if the defendant does not have the power to make the last offer, she will reject the offer and let her lawyer bargain with the defendant as before. Instead of unreasonably assuming that either party has the last word in settlement bargaining, we have assumed that neither party has such power. In that case, the plaintiff would not want to revoke the lawyer's authority ex post.24

One implication of the proposition is that as the lawyer becomes more expensive to hire, more plaintiffs will delegate the authority. Although this result seems counterintuitive, it stems directly from the trading off of lawyer's versus defendant's rents. When the lawyer's outside option ($\bar{U}$) grows, the plaintiff has to compensate the lawyer more than before and, hence, the potential amount of fee saving becomes smaller. Since retaining authority makes more sense when the fee saving is relatively large, increase in the lawyer's outside option makes delegation relatively more attractive. Instead of trying to eliminate the lawyer's rent, the plaintiff would rather focus on the defendant's rent.

On the other hand, as the size of the litigation (W) grows, more plaintiffs would retain the authority. This is because when the plaintiff retains the authority, the lawyer's settlement return is "pegged" at his outside option, making the plaintiff the residual claimant of any increase in the settlement offer. However, when the plaintiff delegates the authority, whenever the settlement gets larger, she has to share that increase with the lawyer, that is, $\alpha$ fraction of the increase goes to the lawyer. Hence, increase in the litigation stake would produce a bigger return for the plaintiff who retains the authority than the one who delegates.

24. Furthermore, conditional on the lawyer's trial effort ($\phi$), the settlement process is a zero-sum game. Hence, there is no surplus for any other type of renegotiation, so long as neither party can credibly force a trial.
Proposition 5. The plaintiff is more likely to delegate when the lawyer becomes more expensive to retain and/or the size of the claim is smaller: \( \gamma^* \) is decreasing in \( \bar{U} \) but increasing in \( W \).

Proof. See the Appendix.

At least from the bargaining perspective, therefore, we would observe more plaintiffs leaving control to their lawyers when the stake of the litigation is small and the lawyer is, in comparison to the size of the stake, expensive to retain, that is, when \( W/\bar{U} \) is small. Tort suits with individual plaintiffs usually involve relatively small monetary damages and lawyers who are considered relatively expensive. Since individual plaintiffs in tort suits tend to be the ones who most heavily rely on their lawyers' judgments, that is, delegate decision making authorities, this model seems to be broadly consistent with their behavior.

6. CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

This paper has demonstrated that there may be an inherent trade-off between securing a high settlement offer from the defendant and minimizing the lawyer's rent. When the plaintiff is actively involved, she can minimize the rent accrued to her lawyer, but, by doing so, she undermines her own position against the defendant and fails to extract the best possible settlement offer. In contrast, when she leaves the lawyer in charge of negotiations, even though the lawyer may secure a substantial amount of rent for himself, he can extract the highest possible offer from the defendant. A plaintiff with weak bargaining power, therefore, is better off ceding control to the lawyer and letting him grab a bigger chunk of the settlement surplus.

Our model can easily be extended to a two-party contingent-fee and delegation problem where both the plaintiff and the defendant use contingent fees and allocate the settlement authority. A puzzling stylized fact about tort litigations, however, is that institutional defendants compensate their lawyers by the hour and are much more involved in the decision-making process.\(^{25}\) While it is difficult to imagine that they do not suffer from any type of agency problem, perhaps they have better methods, other than contingent-fee contracts, to tackle the issue. While this is an extremely intriguing question in and of itself, I thought it was

\(^{25}\) While 87 percent of individual, tort plaintiffs use contingent fees, 81 percent of institutional litigants use hourly fees. See Kritzer (1990, p. 59).
beyond the scope of this paper. Instead, I have started with the assumption that the defendant pays the lawyer by the hour and does not delegate the authority.

Inclusion of risk aversion will introduce another dimension to the bargaining problem. Although the optimal contingent fees, having to perform the dual roles of risk allocation and incentive provision, become less clear-cut, bifurcated fees and delegation will remain useful for the plaintiff. One interesting point is that, in contrast to the proverbial risk-neutral principal and risk-averse agent, when a contingent-fee lawyer has a portfolio of cases while individual clients initiate at most one suit at a time, we are faced with backward risk-sharing possibilities. By shifting some of the risk to the better risk-bearing lawyer, contingent fees can improve welfare. On the other hand, one agent with multiple principals creates a common agency problem, and analyzing the interplay between common agency and reverse risk sharing remains the next step of my research.

Finally, instead of addressing the problem of information asymmetry between the plaintiff and the lawyer, I have stressed the fact that the plaintiff has an incentive to delegate the authority even when she has a good idea about the case. From the contracting perspective, information asymmetry creates the possibility of using a menu of contracts for the lawyer and relying on renegotiation over fees. Since most individual plaintiffs neither present a menu of contracts to their lawyers nor re-negotiate the fee arrangements, bridging the gap between the theoretical possibilities and the reality remains an important issue.

**APPENDIX: PROOFS**

**The Plaintiff’s Problem**

When the plaintiff retains the authority, she chooses \((\alpha, \beta)\) to maximize \((1 - \beta)S_p\), subject to

\[
(1 - \beta)S_p \geq (1 - \alpha)pW_i
\]  \hspace{1cm} \text{(P1)}

\[
\beta S_p \geq \bar{U}
\]  \hspace{1cm} \text{(P2)}

and

\[
\alpha pW - \phi \geq \bar{U}.
\]  \hspace{1cm} \text{(P3)}
When we set up the Lagrangian with \((\lambda, \mu, \nu)\) as the multipliers for the constraints, it becomes

\[
L(\alpha, \beta, \lambda, \mu, \nu) = [\gamma(1 - \alpha) + (1 - \gamma)(1 - \beta)]p(e(\alpha))W - \lambda(\alpha - \beta)
\]

\[\quad - \mu \left[ \gamma \frac{1 - \alpha}{1 - \beta} + (1 - \gamma)p(e(\alpha))W - \bar{U} \right]
\]

(LP)

\[- \nu[\alpha p(e(\alpha))W - \phi(e(\alpha)) - \bar{U}],
\]

where we substituted \([\gamma((1 - \alpha)/(1 - \beta)) + (1 - \gamma)]pW\) into all \(S_p\)'s and simplified (P1) to \(\alpha \geq \beta\).

When the plaintiff delegates the authority, she chooses \((\alpha, \beta)\) to maximize \((1 - \beta)S_\lambda\), subject to

\[
\beta S_\lambda \geq \alpha pW - \phi
\]

(A1)

and

\[
\alpha pW - \phi \geq \bar{U}.
\]

(A2)

With \((\lambda, \mu)\) as multipliers for the constraints, the Lagrangian is

\[
L(\alpha, \beta, \lambda, \mu) = (1 - \beta) \left[ \delta \frac{\alpha p(e(\alpha))W - \phi(e(\alpha))}{\beta} \right] + (1 - \delta)p(e(\alpha))W
\]

\[- \lambda[(\alpha - \beta)p(e(\alpha))W - \phi(e(\alpha))]
\]

(LA)

\[- \mu[\alpha p(e(\alpha))W - \phi(e(\alpha)) - \bar{U}],
\]

where, again, we substituted \([\delta((\alpha pW - \phi)/\beta) + (1 - \delta)pW]\) into all \(S_\lambda\)'s and simplified (A1).

**Proof of Proposition 1**

Suppose the plaintiff is constrained to set \(\alpha = \beta\) and chooses only the optimal \(\alpha\). When she retains the authority, \((1 - \beta)S_p\) becomes \((1 - \alpha)p(e(\alpha))W\), (P1) is automatically satisfied, and (P2) is implied by (P3). So she sets \(\alpha\) to maximize \((1 - \alpha)p(e(\alpha))W\) subject to \(\alpha p(e(\alpha))W - \phi(e(\alpha)) \geq \bar{U}\), which is identical to the plaintiff’s problem when she has no chance to settle. As stated in the assumption, \(\alpha^*\) is the solution; that is, \((1 - \alpha^*)p(e(\alpha^*))e'(\alpha)W = p(e(\alpha^*))W\).

If the plaintiff delegates the authority, \((1 - \beta)S_\lambda\) becomes \((1 - \alpha)p(e(\alpha))W - \delta[(1 - \alpha)/\alpha]\phi(e(\alpha))\), and (A1) is implied by (A2). So she sets \(\alpha\) to maximize \((1 - \alpha)p(e(\alpha))W - \delta[(1 - \alpha)/\alpha]\phi(e(\alpha))\) subject to \(\alpha p(e(\alpha))W - \phi(e(\alpha)) \geq \bar{U}\). Suppose the constraint does not bind at the optimum for the moment. The optimal solution is, then, given by

\[
(1 - \alpha)p'(e(\alpha))e'(\alpha) = p(e(\alpha))W + \frac{\delta}{\alpha} \left[ (1 - \alpha)\phi'(e(\alpha)) - \frac{1}{\alpha} \phi(e(\alpha)) \right].
\]

(FOC)
Let the solution be \( \hat{\alpha} \). From equation (FOC), we must have \( \hat{\alpha} < 1 \), and so long as \( \delta > 0 \),

\[
(1 - \hat{\alpha})p(e(\hat{\alpha}))W - \delta \frac{(1 - \hat{\alpha})}{\hat{\alpha}} \phi(e(\hat{\alpha})) < (1 - \alpha^*)p(e(\alpha^*))W.
\]

Therefore, the plaintiff is better off by retaining the settlement authority. If the constraint does bind, the left-hand side will be even smaller.

Respective returns for the lawyer are \( \alpha^*p(e(\alpha^*))W \) and \( \hat{\alpha}p(e(\hat{\alpha}))W - \delta \phi(e(\hat{\alpha})) \).

We need to consider two cases. First, if \( \hat{\alpha} \leq \alpha^* \), since \( \alpha^*p(e(\alpha^*))W > \alpha^*p(e(\alpha^*))W - \delta \phi(e(\alpha^*)) \), we get \( \alpha^*p(e(\alpha^*))W > \hat{\alpha}p(e(\hat{\alpha}))W - \delta \phi(e(\hat{\alpha})) \). Second, suppose \( \hat{\alpha} > \alpha^* \). From (FOC), to have \( \hat{\alpha} > \alpha^* \), we need \( (1 - \hat{\alpha})\phi'(e(\hat{\alpha})) < (1/\hat{\alpha})\phi(e(\hat{\alpha})) \). Since \( \phi''(e) \geq 0 \), \( \hat{\alpha}'(\delta) < 0 \) given that \( \hat{\alpha} > \alpha^* \). When we differentiate \( \hat{\alpha}p(e(\hat{\alpha}))W - \delta \phi(e(\hat{\alpha})) \) with respect to \( \delta \), we get

\[
\frac{d}{d\delta} \hat{\alpha}p(e(\hat{\alpha}))W - \delta \phi(e(\hat{\alpha})) \bigg| \hat{\alpha} > \alpha^* = \frac{d\hat{\alpha}}{d\delta} p(e(\hat{\alpha}))W - \phi(e) + (1 - \delta)\phi'(e(\alpha)\hat{\alpha}'(\delta)) \bigg| \hat{\alpha} > \alpha^* < 0.
\]

Therefore, the lawyer’s return strictly decreases as \( \hat{\alpha} \) gets bigger. Hence, \( \alpha^*p(e(\alpha^*))W > \hat{\alpha}p(e(\hat{\alpha}))W - \delta \phi(e(\hat{\alpha})) \). Q.E.D.

**Proof of Proposition 2**

The first-order conditions of equation (LP) with respect to \( (\alpha, \beta) \) are

\[
p'(e(\alpha))e'(\alpha)W \left[ \gamma(1 - \alpha) + (1 - \gamma)(1 - \beta) - \mu \beta \left\{ \frac{1 - \alpha}{1 - \beta} + (1 - \gamma) \right\} \right]
\]

\[
= p(e(\alpha))W \left\{ \gamma - \frac{\beta \mu}{1 - \beta} \gamma + \nu \right\} + \lambda \quad \text{(FOC P1)}
\]

and

\[
\lambda = \left[ (1 - \gamma)(1 + \mu) + \mu \gamma \frac{1 - \alpha}{1 - \beta} \right] p(e(\alpha))W. \quad \text{(FOC P2)}
\]

The complementary slackness conditions are

\[
\lambda(\alpha - \beta) = 0, \quad \text{(CS P1)}
\]

\[
\mu \left\{ \beta \left\{ \frac{1 - \alpha}{1 - \beta} + (1 - \gamma) \right\} p(e(\alpha))W - \bar{U} \right\} = 0, \quad \text{(CS P2)}
\]

and

\[
v(\alpha p(e(\alpha))W - \phi(e(\alpha)) - \bar{U}) = 0, \quad \text{(CS P3)}
\]

with the multiplier restrictions of \( \lambda, \mu, \nu \leq 0 \).
Let the optimal solution be \((\alpha_\ast, \beta_\ast)\). Suppose that (P2) does not bind at optimum. Then, by decreasing \(\beta\) (while keeping \(\alpha\) fixed at \(\alpha_\ast\)), the objective function can be increased without violating any of the constraints, since \((\partial \partial \beta (1 - \beta))_S > 0\) and \((\partial \partial \beta \beta)_S > 0\). Therefore, at optimum, (P2) must bind: \(\mu < 0\). Now, suppose that (P1) binds. Then (P2) becomes \(\alpha_\ast p(e(\alpha_\ast))W = \bar{U}\), which is a violation of (P3). At optimum, therefore, (P1) must not bind: \(\alpha_\ast > \beta_\ast\) and \(\lambda = 0\). Q.E.D.

Proof of Corollary 1

The inequality \(\mu < 0\) implies that (FOC P1) becomes

\[
p(e(\alpha_\ast))W = \left(1 - \alpha_\ast + \frac{(1 - \gamma)}{\gamma} (1 - \beta_\ast)\right) p'(e(\alpha_\ast))e'(\alpha_\ast)W.
\]

(Since \(p(e(\alpha_\ast))W = \left(1 - \alpha_\ast\right) p'(e(\alpha_\ast))e'(\alpha_\ast)W\), we get \(p(e(\alpha))W < \left(1 - \alpha + (1 - 1/\gamma) \times (1 - \beta) p'(e(\alpha))e'(\alpha)W\) when \(\alpha = \alpha_\ast\). To obtain (P*) from this inequality, we must increase \(\alpha\) because the right-hand side is decreasing (from \(p' < 0\) and \(e' < 0\)), while the left-hand side is increasing, with respect to \(\alpha\). Hence, \(\alpha_\ast > \alpha_\ast\). Finally, \(\alpha p(e(\alpha))W - \phi(e(\alpha))\) is increasing with respect to \(\alpha\), so \(\alpha p(e(\alpha))W - \phi(e(\alpha)) > \alpha_\ast p(e(\alpha))W - \phi(e(\alpha)) \geq \bar{U} (\nu = 0)\).

As \(\gamma \to 1\), (P*) converges to \(p(e(\alpha_\ast))W = (1 - \alpha_\ast) p'(e(\alpha_\ast))e'(\alpha_\ast)W\). This is identical to the plaintiff's maximization problem with a single contingent fee. Therefore, \(\alpha \to \alpha_\ast\) as \(\gamma \to 1\). Consider (P2) at optimum: \(\beta S_\ast = \bar{U}\). As \(\gamma\) increases, \(\beta S_\ast\) becomes smaller. To satisfy the equality, \(\beta\) has to become bigger. When \(\gamma \to 0\), the right-hand side of (P*) goes to infinity, implying that \(\partial L_\beta/\partial \alpha > 0\). Hence, \(\alpha \to 1\) or any legally constrained maximum \((\bar{\alpha})\). Similarly, \(\beta\) becomes smaller. In the limit, the plaintiff gets \(p(e(1))W - \bar{U} > (1 - \alpha_\ast) p(e(\alpha_\ast))W\). Q.E.D.

Proof of Proposition 3

The first-order conditions of (LA) with respect to \(\alpha\) and \(\beta\) are

\[
p'(e)e'(\alpha)W(1 - \beta)(1 - \delta) - \lambda \beta = p(e(\alpha))W\left(\mu - \delta \frac{1 - \beta}{\beta} - \lambda\right)
\]

(FOC A1)

and

\[
- \frac{\delta}{\beta^2} \alpha p(e(\alpha))W - \phi(e(\alpha)) - (1 - \delta) p(e(\alpha))W = \lambda p(e(\alpha))W.
\]

(FOC A2)

Complementary slackness conditions are

\[
\lambda [(\alpha - \beta) p(e(\alpha))W - \phi(e(\alpha))] = 0
\]

(CSA1)

and

\[
\mu [\alpha p(e(\alpha))W - \phi(e(\alpha)) - \bar{U}] = 0,
\]

(CSA2)

with the multiplier restrictions of \(\lambda \geq 0\) and \(\mu \leq 0\).
Let the optimal solution be \((\alpha_\lambda, \beta_\lambda)\). Since the left-hand side of (FOC A2) is negative, we must have \(\lambda < 0\) and \((\alpha_\lambda - \beta_\lambda)p(e(\alpha_\lambda))W - \phi(e(\alpha_\lambda)) = 0\). When this equality is plugged into (FOC A2) and \(S_\lambda\), we get \(\lambda = -(1 - \delta) - \delta\beta_\lambda\) and \(S_\lambda = p(e(\alpha_\lambda))W\). Condition (FOC A1), in turn, becomes \(p'(e)e'(\alpha_\lambda)W = p(e(\alpha_\lambda))W(\mu + 1)\), which implies that \(\alpha_\lambda > \alpha^*\) since \(\mu \leq 0\) and \((1 - \alpha^*)p'(e) \times e'(\alpha^*)W = p(e(\alpha^*))W\). Therefore,

\[
p'(e)e'(\alpha_\lambda)W = p(e(\alpha_\lambda))W \tag{A^*}
\]

and

\[
\beta_\lambda p(e(\alpha_\lambda))W = \alpha_\lambda p(e(\alpha_\lambda))W - \phi(e(\alpha_\lambda)) > \alpha^*p(e(\alpha^*))W - \phi(e(\alpha^*)) \geq U(\mu = 0).
\]

Q.E.D.

**Proof of Corollary 2**

From \((1 - \alpha^*)p'(e)e'(\alpha^*)W = p(e(\alpha^*))W\), we get \(p'(e)e'(\alpha)W > p(e(\alpha))W\) when \(\alpha = \alpha^*\). To obtain \((A^*)\) from this inequality, \(\alpha\) must increase since \(p'(e)e'(\alpha)W\) decreases (from \(p^* < 0\) and \(e'' < 0\)), while \(p(e(\alpha))W\) increases, with respect to \(\alpha\). Therefore, \(\alpha_\lambda > \alpha^*\).

At optimum, the plaintiff’s expected return can be written as \(p(e(\alpha))W - (\alpha p(e(\alpha))W - \phi(e(\alpha))).\) At \(\alpha = \alpha^*\), this expression is strictly increasing since \(p'(e)e'(\alpha^*)W > p(e(\alpha^*))W\). Together with the fact that \(p(e(\alpha))W - (\alpha p(e(\alpha))W - \phi(e(\alpha)) > (1 - \alpha^*)p(e(\alpha))W\) for any \(\alpha\), we have

\[
p(e(\alpha_\lambda))W - \alpha_\lambda p(e(\alpha_\lambda))W - \phi(e(\alpha_\lambda)) > (1 - \alpha^*)p(e(\alpha^*))W.
\]

Q.E.D.

**Proof of Proposition 4**

When the plaintiff retains the authority, her return is \(S_p(\gamma) - U\), where \(S_p(1) - U = (1 - \alpha^*)p(e(\alpha^*))W\) and \(S_p(0) - U = p(1)W - U\). First, when \(S_p(\gamma)\) is differentiated with respect to \(\gamma\), and \((P^*)\), \(S_\gamma\), and \(\beta'(\gamma)\), which are obtained from \(\beta S_p(\gamma) = U\), are used to simplify, we get

\[
\frac{d}{d\gamma} S_p(\gamma) = -\alpha - \beta)pW\gamma(1 - \alpha) + (1 - \gamma)(1 - \beta)\gamma(1 - \alpha) + (1 - \gamma)(1 - \beta)^2 < 0.
\]

Second, we know that

\[
(1 - \alpha^*)p(e(\alpha^*))W < p(e(\alpha_\lambda))W - (p(e(\alpha_\lambda))W - \phi(e(\alpha_\lambda)) < p(1)W - U.
\]

With the monotonicity of \((d/d\gamma)S_p\), the existence of \(\gamma^*\) is satisfied. Q.E.D.
Proof of Proposition 5

When we let \( S_p \) and \( S_\alpha \) as the settlement returns at optimum and with the envelope theorem,

\[
\frac{\partial S_p}{\partial U} = \frac{\partial L_p(\alpha_p, \beta_p, \lambda_p, \mu_p, \nu_p)}{\partial U} = \mu_p + \nu_p
\]

and

\[
\frac{\partial S_\alpha}{\partial U} = \frac{\partial L_\alpha(\alpha_\alpha, \beta_\alpha, \lambda_\alpha, \mu_\alpha)}{\partial U} = \mu_\alpha.
\]

Since \( \mu_\alpha = \nu_\alpha = 0 \) and \( \mu_p < 0 \), \( \partial S_p/\partial U < 0 \) and \( \partial S_\alpha/\partial U = 0 \). When \( U \) becomes larger, \( S_p|\gamma^* < S_\alpha|\gamma^* \), so to restore \( S_p = S_\alpha \), \( \gamma^* \) must decrease, since \( (d/d\gamma)S_p < 0 \).

Similarly, we get

\[
\frac{\partial S_p}{\partial W} = \left[ \gamma(1 - \alpha_p) + (1 - \gamma)(1 - \beta_p) \right] 
\times \frac{\gamma(1 - \alpha_p) + (1 - \gamma)(1 - \beta_p)}{\gamma(1 - \alpha_p) + (1 - \gamma)(1 - \beta_p)^2} p(e(\alpha_p))
\]

and

\[
\frac{\partial S_\alpha}{\partial W} = (1 - \alpha_\alpha)p(e(\alpha_\alpha)).
\]

Since \( 1 \geq \alpha_p > \beta_p > 0 \), \( \partial S_p/\partial W > (1 - \alpha_p)p(e(\alpha_p)) \). Furthermore, from

\[
[\gamma^*(1 - \alpha_p) + (1 - \gamma^*)(1 - \beta_p)]p(e(\alpha_p))W
\]

\[
= (1 - \alpha_\alpha)p(e(\alpha_\alpha))W + \phi(\alpha_\alpha),
\]

we get \( [\gamma(1 - \alpha_p) + (1 - \gamma)(1 - \beta_p)]p(e(\alpha_p)) > (1 - \alpha_\alpha)p(e(\alpha_\alpha)) \). Therefore, \( \partial S_p/\partial W|\gamma^* > \partial S_\alpha/\partial W|\gamma^* > 0 \). When \( W \) increases, to restore \( S_p = S_\alpha \), \( \gamma^* \) must increase. Q.E.D.

REFERENCES


Brickman, Lester, Michael J. Horowitz, and Jeffrey O’Connell. 1994. Rethinking


